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Psychopathy as a Disorder of Communion: Investigating an Overlooked Deficit

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ABSTRACT

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Psychopathy is a personality disorder that is robustly linked to interpersonal difficulties, delinquency, aggression, and general antisocial conduct. Previous research has explored a number of potential deficits underlying these behaviors including reduced fear, impaired emotional responding, and poor response modulation. Drawing from extant personality work that has demonstrated the importance of interpersonal antagonism as a core feature of psychopathy, the present project examines deficits in social closeness as potential core features of the disorder. This possibility was examined in 195 undergraduate students (49% male) via a multi-method approach. In addition to several psychopathy instruments, participants completed self-report measures of social closeness including the NEO-PI-R, Multidimensional Personality Questionnaire, and Interpersonal Adjective Scales. Participants also completed laboratory tasks designed to measure social closeness including a social discounting task and an Implicit Association Task. Results indicate that more psychopathic individuals feel less socially close to others and value social relationships less. Therefore, the present study suggests that deficits in social closeness and communion

should be studied more specifically in psychopathy, and that such deficits may, in fact, be central to the disorder.

INTRODUCTION

Psychopathy is a personality disorder that is robustly linked to interpersonal difficulties and externalizing behaviors such as substance use and abuse (Taylor & Lang, 2006), delinquency, aggression, and general antisocial conduct (Leistico, Salekin, DeCoster, & Rogers, 2008). For example, a meta-analytic review indicated that high scores on the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 2003), a widely used measure of psychopathy, predicted future recidivism (*mean* r_w = .24; Walters, 2003). Moreover, psychopathy has been found to be related particularly strongly to aggression (Porter & Woodworth, 2006); in fact, Porter and Woodworth write "psychopaths probably commit more non-sanctioned violence than any other members of society" (p.490). Not surprisingly, an inverse relationship between psychopathy and overall success in social relationships has been found (Ulrich, Farrington, and Coid, 2008). For example, successful relationships were negatively correlated with the interpersonal (r = -.15) and affective domains (r = -.19) of psychopathy. It is clear that those high on measures of psychopathy are more likely than non-psychopathic individuals to engage in crime, violence, and antisocial behavior as well as to lack successful social relationships. As these findings have consequences for society, much research is aimed at understanding why the psychopath behaves as he or she does.

One place to look for this answer is in the basic personality traits that are considered characteristic of the disorder. There is a growing body of research that attempts to understand the disorder using general models of personality such as the Five Factor Model (FFM; McCrae & Costa, 1990), Tellegen's (1985) three factor model, and the more recently developed HEXACO model (Lee & Ashton, 2004).

Psychopathy and General Models of Personality

Most of this research has focused on the FFM. Assessed via the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), the FFM consists of five broad domains (Neuroticism [N], Extraversion [E], Openness [O], Agreeableness [A], and Conscientiousness [C]) with six underlying facets per domain. Research using the FFM generally identifies the domains of agreeableness and conscientiousness as the most central to psychopathy, with less sizeable contributions from neuroticism and extraversion (Lynam & Widiger, 2007). This pattern of personality is consistently identified across various approaches when using the FFM including expert profiles of prototypic psychopaths, FFM translations of extant psychopathy inventories, and empirical studies of convergence across psychopathy measures as they relate to the FFM (Miller, Lynam, Widiger, Leukefeld, 2001; Widiger & Lynam, 1998; Hicklin & Widiger, 2005). In addition, a meta-analysis revealed that psychopathy is most strongly associated with low levels of agreeableness (weighted mean r = -.52) compared to all other FFM domains (Lynam & Derefinko, 2006). Based on data from various methods, Lynam and Widiger (2007) offered a consensus FFM profile of psychopathy that consisted of high levels of interpersonal antagonism (vs. agreeableness), impulsivity, and dominance, and by low levels of self-directed negative

affect that could be acting as an impetus for the interpersonal difficulties and externalizing behaviors psychopaths usually exhibit.

Tellegen's three factor model provides another view of the personality characteristics that make up psychopathy. The three factor model is operationalized through the Multidimensional Personality Questionnaire (MPQ; Tellegen & Waller, 2008) and assesses 11 personality trait subscales (Well-Being, Social Potency, Achievement, Social Closeness, Stress Reaction, Alienation, Aggression, Control, Harm Avoidance, Traditionalism, and Absorption) and three higher-order domains: Positive Emotionality (PEM), Negative Emotionality (NEM), and Constraint (CON). Findings using the MPQ have shown a consistent pattern of traits related to psychopathy, such that the disorder is positively correlated with the Alienation and Aggression subscales of the NEM domain and the Social Potency subscale of the PEM domain, and negatively associated with the Control and Harm Avoidance subscales of the CON domain (Lilienfeld & Andrews, 1996; Verona, Patrick, & Joiner, 2001). For example, Benning, Patrick, Hicks, Blonigen, and Krueger (2003) showed that these five subscales were the strongest MPQ correlates of psychopathy assessed using the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996).[1] Similarly, this pattern has been found using the PCL-R such that psychopathy showed the highest positive correlations with Social Potency and Aggression, and the highest negative correlations with the CON domain subscales of Control and Harm Avoidance (Verona, et al., 2001).

[1]Correlations for PPI total scores with MPQ subscales were found by weighting and averaging across the Factor 1 and Factor 2 scores provided by Benning et al.

It is important to note that the MPQ subscales most consistently associated with psychopathy are also the best indicators of the two FFM domains consistently associated with psychopathy, agreeableness and conscientiousness. For example, in a comparison of the MPQ and FFM, Gaughan, Miller, Pryor, and Lynam (2009) identified Social Potency, Aggression, and Alienation to be the best indicators of NEO-PI-R- assessed agreeableness (*r's* = -.41, -.58, and -.38), and Control, Harm Avoidance, and Achievement to be the best indicators of NEO-PI-R- assessed conscientiousness (*r's* = .66, .30, and .47). After factor analyzing multiple psychopathy scales, Gaughan et al. found that the core features of psychopathy, Callous/Manipulation (C/M) and Dysregulation/Disinhibition (D/D) were most strongly related to Social Potency, Aggression, Alienation, and low Social Closeness, Harm Avoidance, Control, and Traditionalism. Not surprisingly, in the FFM analysis agreeableness emerged as the most robust correlate across these two factors, with conscientiousness also correlating highly with D/D; again indicating that MPQ subscales indicative of psychopathy are measuring FFM agreeableness. This connection is in line with the idea that the two models measure similar constructs and conceptualize psychopathy in much the same way, as well as lends support to the centrality of agreeableness and conscientiousness in the disorder (Church, 1994).

Lastly, research using the HEXACO model of personality as operationalized through the Revised HEXACO Personality Inventory (HEXACO-PI-R; Lee & Ashton, 2006) identifies five broad personality domains that are comparable to the FFM plus a sixth domain of Honesty-Humility. The Honesty-Humility domain in particular has been considered important in psychopathy. Lee and Ashton (2005) found the

Honesty-Humility domain as well as FFM agreeableness to be the most highly correlated with psychopathy compared to all other domains across the two models. In addition, examination of the Honesty-Humility domain in FFM terms shows that it is primarily associated with FFM agreeableness (Ashton, Lee, Visser, Pozzebon, 2008), and that NEO-PI-R agreeableness is uniformly, strongly correlated with both HEXACO PI-R Agreeableness (r = .68) and Honesty-Humility (r = .67) (Gaughan, Miller, & Lynam, 2012). These findings indicate that the Honesty-Humility domain is substantially overlapping with that of FFM agreeableness and supports the role of agreeableness in psychopathy.

The recurrent finding of large correlations between psychopathy and agreeableness may hold the key to why psychopaths behave as they do. Based on this logic, agreeableness and functions related to the domain might be considered core features of psychopathy, and our knowledge of agreeableness may provide information about the disorder.

Agreeableness

Within the FFM, agreeableness is made up of six lower-order facets labeled altruism, tender-mindedness, trust, straightforwardness, compliance, and modesty. Creators of the NEO-PI-R, Costa and McCrae describe agreeableness as "… primarily a dimension of interpersonal tendencies. The agreeable person is fundamentally altruistic. He or she is sympathetic to others and eager to help them, and believes that others will be equally helpful in return. By contrast, the disagreeable or antagonistic person is egocentric, skeptical of others' intentions, and competitive rather than cooperative" (p. 15). Similarly, Graziano and Eisenberg (1997) describe agreeableness

as an individual motivation to develop and uphold positive interpersonal relationships by accommodating to others, and research has supported this view. Specifically, Barrett and Piertromonaco (1997) found a negative relation between FFM agreeableness and conflict in interaction, while Neyer and Asendorpf (2001) found a positive relation between agreeableness and closeness and importance of relationships.

Others have placed agreeableness within a larger interpersonal model where it represents a slight rotation of a major axis referenced as communion (vs. agency), or motivation for intimacy, union, and solidarity with large, social groups (Wiggins, 1991; Bakan, 1966). In this model, represented as a circumplex, agreeableness resides opposite coldheartedness/ quarrelsomeness (Wiggins, Trapnell, & Phillips, 1988; Moskowitz, 1994), and empirical evidence supports the idea that agreeableness and quarrelsomeness are opposite ends of a single dimension (Moskowitz, 2005; See Figure 1). Again, this conceptualization highlights the link that agreeableness has to social functioning, feeling close to, and cooperating with others.

Psychopathic Deficits

To the extent that psychopathy is related to agreeableness and agreeableness assesses social closeness, psychopathy might usefully be considered a disorder of social relations. This idea is in contrast to deficits that have been suggested previously in the literature. For example, Lykken (1957, 1995) posits that the core deficit of the disorder is low fear, such that the psychopath does not experience fear or anxiety that would normally inhibit maladaptive behavior. Lykken's low fear hypothesis has been explained by a diminished Behavioral Inhibition System (BIS; Gray, 1970), a neuropsychological system that guides responses to anxiety-provoking cues in the

environment by inhibiting behavior. A weak BIS is illustrated in psychopathy by a proclivity to approach conflict situations with minimal anxiety and to behave without restraint in regard to potential punishments (Gray, 1970). The low fear hypothesis is not without its limitations, however, and questions remain regarding the role of low fear in relation to other aspects of psychopathy including antisocial behavior, the distinction between fear and anxiety, whether the weak BIS theory is truly compatible with low fear, and if the deficit lies neurologically in the septal hippocampus or amygdala (Lang, Davis, & Ohman, 2000; Gray & McNaughton, 2000; Fowles, 1988; Patrick, 1994).

Another theory put forth by Hare continues the focus on affective difficulty as the core of the disorder. Specifically, Hare (1979) and others have investigated the possibility of deficits in language and emotion processing that lead to maladaptive behavior. Studies have shown less cerebral lateralization in psychopaths compared to non-psychopaths in word recognition (both neutral and affect-laden) and emotional stimuli tasks (e.g. Hare & McPherson, 1984, Day & Wong, 1996, Kiehl, Hare, McDonald, & Brink, 1999). These findings suggest that psychopaths may have impaired inter-hemispheric communication or a deficit in information processing/integration skills that result in a lack of response to emotional cues and an inability to understand meanings and implications of language fully (Blair, Jones, Clark, & Smith, 1997, Brinkley, Bernstein, Newman, 1999). Though the hypothesis has merit, there have been some opposing findings and several failures to replicate past findings of Hare's work (Hiatt, Lorenz, & Newman, 2002).

Building on the idea of a deficit in emotion recognition, Blair and colleagues (e.g. Blair, 1999) posit a violence inhibition mechanism (VIM) as a core deficit of psychopathy. The VIM model suggests that animals, including humans have the biological capability to recognize that they are causing harm, distress, or discomfort in others as exhibited through negative affect by the distressed; this realization leads to an increase in autonomic activity and subsequent freezing or inhibition of the behavior. Originally presented as an important part of moral socialization, the model is rooted in the idea that distress to others is considered aversive to most people so we seek to minimize it and learn to avoid behaviors that may be considered harmful (Blair, 1995; Bandura & Rosenthal, 1966). The theory posits that psychopaths lack this mechanism and will continue acting harmfully despite visible negative affect and signs of distress from another individual. Similar to other hypothesized deficits, the VIM model is linked to dysfunction in the amygdala of psychopaths, and research has shown reduced amygdala activation in psychopathic individuals (Blair, 2005; Kiehl, Smith, Hare, Mendrek, Forster, Brink, & Liddie, 2001). Despite empirical work on the VIM model, some consider this hypothesis to be an incomplete view of the disorder as it fails to account for victimless crimes and behaviors.

In contrast to these affective-centered theories Newman and colleagues put forth the theory of response modulation that focuses on cognitive dysfunction (e.g. Patterson & Newman, 1993, Newman, 1998). The response modulation hypothesis suggests that psychopaths have a deficit in responding to environmental cues for punishment when they are engaged in a goal-directed activity. It is suggested that they are unable to suspend behavior to attend to and assess contextual feedback; therefore,

they fail to modify their actions appropriately. Further, they are poor at anticipating consequences of their actions and seem unable to experience negative affect automatically following a behavior. Generally, psychopaths are able to self-regulate, but it is a much more effortful endeavor for the group because they do not use the automatic processes that others do to guide behavior (Newman, 1998). Though there is evidence for this theory (e.g. Newman, Patterson, & Kosson, 1987), other research indicates that response modulation may be context specific and not a general deficit in psychopathy (Newman, Patterson, Howland, & Nichols, 1990).

It is notable that the majority of the extant hypothesized deficits are linked to biological or cognitive functioning and/or brain regions (e.g. amygdala). However, the success of linking psychopathic deficits to brain regions and biological bases in this way is unclear as different deficits are often linked to the same region. The idea of a deficit in social closeness is relatively new and less obviously linked to biological functioning; facts that likely contribute to the dearth of research on the prospect. Despite obvious biological underpinnings, a deficit of social closeness is plausible and is considered a key deficit in other disorders currently (e.g. Autism Spectrum Disorders). Therefore, the present study focuses on investigating the possibility that psychopathy can be considered a disorder of social closeness, concentrating on an area that is often overlooked in the literature.

In order to address this possibility a multimethod approach to assessing social closeness using questionnaires and laboratory tasks is taken. Multiple self-report questionnaires are used to assess various aspects of the participants including basic personality traits, level of psychopathy, and degree of social closeness. This array of

measures will provide a multi-faceted view of the participants and provide opportunities for examining the relationships among personality, psychopathy, and social closeness. For example, two psychopathy measures, the popularly used Self-Report Psychopathy Scale- III (SRP-III; Williams, Paulhus, & Hare, 2007) and the new Elemental Psychopathy Assessment- Short Form (EPA-SF; Lynam, Sherman, Miller, & Widiger, 2013) are used to assess psychopathy in particular while the NEO-PI-R is utilized to assess a broad range of personality traits. In addition, the Interpersonal Adjectives Scales (IAS; Wiggins, 1995) and MPQ are used to assess interpersonal functioning.

Lab Tasks

To supplement the self-report measures, laboratory tasks will be used to assess social closeness. One such task is a social discounting task (e.g. Jones & Rachlin, 2006) that asks respondents to identify people they feel socially close to at various levels (i.e. closest to most distant) and then includes those target individuals in a money choice task. Participants must choose between receiving a hypothetical monetary amount for themselves and splitting a hypothetical monetary amount with an individual at a given level of social closeness. For example, "would you prefer $100 for yourself alone or $75 for yourself and $75 for someone whom you consider close to you?"

Social discounting is unique compared to other social closeness tasks and self-report questionnaires in that it connects the value of social relationships with hypothetical monetary amounts. Though the method is somewhat novel, it was developed out of the more extensive research associated with temporal discounting that

examines an individual's proclivity to surpass an immediate reinforcer for a larger, delayed reinforcer (Mazur, 1987). This link stems from the idea that people's ability to make choices in regard to their own interests over time (temporal discounting) may be related to their ability to make choices in regard to interests of a social group (social discounting), such that self-control and altruism may be related (e.g. Ainslie, 2001; Rachlin, 2002).

Social discounting tasks similar to the one used in the current study have been used in a wide range of fields to examine how people make choices in social dyads or groups. For example, economists include social discounting as one of three dimensions of resource allocation--consumption by other people—and describe it as an "interpersonal distance dimension replacing the concept of altruism" (Simon, 1995; p. 367). Further, previous studies have found that as a target individual becomes socially farther from the participant, the participant is less willing to forgo personal monetary gain to grant a fixed amount to that target person (Jones & Rachlin, 2006; 2008).

The social discounting value (*s*) and hyperbolic function derived from the social discounting task measures the value of helping another person at a given social distance. In addition, results of this task quantitatively measure an individual's level of altruistic versus selfish choices. Therefore, social discounting can provide the ability to examine how participants value their relationships with others who differ in levels of closeness in an easily accessible and understandable unit of measurement. Furthermore, this task could provide information on how social closeness affects decision making and altruistic behaviors.

A second laboratory task designed for the current study indexes social closeness through a person-thing Implicit Association Task (IAT). Implicit Association Tasks aim to measure implicit attitudes or associations of an individual through underlying, automatic evaluations of which he or she is not aware (Greenwald & Banaji, 1995). These tasks are commonly used in stereotyping research to determine implicit associations and biases towards people of various races paired with pleasant and unpleasant words, but have been used to examine a range of topics including condom use, general in-group biases, gender differences, and political affiliation. The task assesses response time and accuracy of responses to determine underlying associations such that fewer errors and faster response time on certain trials indicate a preference for one category.

The person-thing IAT utilized in the present study can be used to examine the preference individuals show for people or things based on reaction times. Throughout the task words (pleasant and unpleasant) and pictures (people and things) are categorized based on specified response options. For example, during some trials pleasant words and pictures of people are matched to the same response option with unpleasant words and pictures of things to the other, while the opposite is true for other trials. Preferences are determined by faster reaction times in one response option compared to the other and an overall IAT value (*d*) measures the IAT effect.

This person-thing IAT may provide incremental information on how close or connected individuals feel to other people compared to non-social objects based on participants' response patterns. Though there has been some previous research examining gender differences in regard to orientation to people versus objects (e.g.,

Jennings, 1977) there are mixed results, and to the author's knowledge there is no extant IAT that measures this effect through implicit preferences as opposed to orientation. Therefore, these tasks along with self-report questionnaires will give a broad, unique picture of social closeness and the role it may play in psychopathy.

Present Study

Using these methods it is hypothesized that those high in psychopathy will demonstrate feeling less close to others than those lower in psychopathy, demonstrated by relations with questionnaire measures of social closeness. Within the MPQ it is hypothesized that psychopathy will relate differentially to the Agentic and Communal aspects of the measure, indexed by a negative relationship with the Social Closeness subscale and a positive relationship with the Social Potency and Achievement subscales. Further, a negative relationship is expected between psychopathy and the Love dimension of the IAS whereas psychopathy should be positively correlated with the Dominance dimension. In addition, it is predicted that this relationship will also be observable at the factor level of psychopathy, with measures of social closeness yielding negative relationships with the Callous Affect and Interpersonal Manipulation factors of psychopathy specifically. In regard to the laboratory tasks it is expected that those high in psychopathy will show higher social discounting rates and a lower preference for people (versus things) in an IAT task compared to those lower on psychopathy. Overall, it is expected that a deficit in social closeness will emerge as a core component of psychopathy that is strongly connected to low agreeableness as well as account for large portions of variance within each measure.

METHOD

Participants

Participants were 195 undergraduate students (49% male) at a large Midwestern university. The sample consisted of various racial and ethnic groups representative of the university population at large and was 76% Caucasian, 13% Asian, 5% African American, 2% Hispanic, and 4% Other or multi-racial. All participants in the study received research credit for their Introduction to Psychology course in exchange for participation. Upon receiving signed informed consent all participants completed the protocol individually. In addition to their questionnaire responses participants provided basic demographic information including intended major. Participants were assigned identification numbers that were stored separately from their consent forms in order to keep their responses anonymous.

Measures

Psychopathy

Self-Report Psychopathy Scale III (SRP-III). Psychopathy was assessed using the Hare Self-Report Psychopathy Scale- III (SRP-III; Williams, Paulhus, & Hare, 2007). The SRP-III contains 64 self-report items on a five-point Likert-type scale ranging from “strongly disagree” to “strongly agree”, assessing an individual’s overall level of psychopathy (SRP-T), and four subscales labeled Interpersonal Manipulation

(SRP-IPM), Callous Affect (SRP-CA), Erratic Life Style (SRP-ELS), and Anti-social Behavior (SRP-ASB). The SRP-III was found to be reliable in the present sample with coefficient alphas of .93, .84, .85, .82, and .82 for SRP Total, SRP-ASB, SRP-IPM, SRP-CA, and SRP-ELS, respectively.

Elemental Psychopathy Assessment- Short Form (EPA-SF). An additional psychopathy assessment, based on the FFM, was also included. The Elemental Psychopathy Assessment- Short Form (EPA-SF; Lynam, Sherman, Miller, & Widiger, 2013) is a new measure of psychopathy derived from the Elemental Psychopathy Assessment (EPA; Lynam, et al., 2011) and is comprised of 72 self-report items. Participants indicate their agreement with statements dealing with how they tend to think, feel, and act such as "Sometimes I lie simply because I enjoy it" on a 5- point Likert-type scale ranging from "disagree strongly" to "agree strongly." The EPA-SF yields 18 subscales (Anger, Arrogance, Callousness, Coldness, Disobliged, Distrust, Dominance, Impersistence, Invulnerability, Manipulation, Opposition, Rashness, Self-Assurance, Self-Centeredness, Self-Contentedness, Thrill Seeking, Unconcern, Urgency) that make up four composite scores—Antagonism, Emotional Stability, Disinhibition, and Narcissism as well as an overall psychopathy score. In this sample the reliability of two subscales, Anger and Arrogance, fell below what is considered minimally reliable with coefficient alpha values of .45 and .59, respectively. The remaining 16 subscales were found to be reliable with coefficient alphas ranging from a low of .64 for Distrust to a high of .80 for Thrill Seeking. The median coefficient alpha for all 18 subscales was .73. Further, the higher order factors of the EPA-SF,

Antagonism, Emotional Stability, Disinhibition, and Narcissism were found to be reliable with linear composite values of .91, .83, .93, and .75, respectively.

Revised NEO Personality Inventory (NEO-PI-R). Basic elements of personality were assessed using the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), one of the most widely used FFM measures of personality. The measure contains 240 self-report items on a five point Likert-type scale ranging from "strongly disagree" to "strongly agree," assessing five higher order domains (Neuroticism [N], Extraversion [E], Openness to Experiences [O], Agreeableness [A], Conscientiousness [C]) and 30 lower-order facets. The 30 facets of the NEO-PI-R were reliable in the current study with coefficient alphas ranging from a low of .53 for Dutifulness to a high of .84 for Trust and an average coefficient alpha of .70. Only three of the 30 facets had coefficient alphas below .60: Competence ($\alpha = .58$), Dutifulness ($\alpha = .53$), and Impulsiveness ($\alpha = .55$). Similarly, the five domains were reliable with Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness yielding linear composite reliabilities of .90, .92, .87, .92, and .91, respectively.

Self-Report Measures of Social Closeness

Interpersonal Adjective Scales (IAS). To assess interpersonal orientation, participants completed the Interpersonal Adjective Scales (IAS; Wiggins, 1995). The IAS consists of 64 adjectives such as "antisocial", "kind", and "tricky" that participants rate themselves on an 8-point Likert-type scale ranging from "extremely inaccurate" to "extremely accurate." The IAS yields eight octant scores as well as scores on the two

high-order dimensions of Dominance and Love. Alphas for the eight octant scores ranged from .64 for JK (Unassuming-Ingenuous) to .87 for FG (Aloof- Introverted).

Multidimensional Personality Questionnaire (MPQ). The two aspects of interpersonal closeness, Agentic and Communal positive emotionality were assessed using four subscales from the Positive Emotionality factor of the Multidimensional Personality Questionnaire (MPQ; Tellegen & Waller, 2008) –Achievement, Social Closeness, Well-being, and Social Potency. The portion used consisted of 89 items on a true/false scale on questions such as, "When I work with others I like to take charge," and "I am a warm person rather than cool and distant." Achievement, Social Potency, Social Closeness, and Well-being were found to be reliable in the current sample with coefficient alphas of .79, .84, .86, and .91, respectively.

Performance Measures of Social Closeness

Social discounting. A social discounting task was used as an additional measure of social closeness. Participants first wrote the names of people in concentric circles on a diagram with each circle representing a degree of social closeness (see Appendix B). The diagram consisted of five circles labeled Closest (1), Close (2), Neither Close nor Distant (3), Distant (4), and Most Distant (5). Each participant was instructed to write two names in each circle of social closeness. Each participant then completed 45 items on which they were given two options: a) receiving a hypothetical monetary amount for themselves or, b) receiving a hypothetical monetary amount for themselves and an individual from their diagram in a given social circle. It was stated explicitly in the instructions that the hypothetical monetary amount would go to only the person that was selected and could not be shared. In addition, the instructions stated

explicitly that if the participant chose the second option (giving the money to the friend) the friend would not reciprocate monetarily or in any other form of favor. Both the hypothetical monetary amounts and the social distance of the target individual were varied in each question, but all participants were shown the same pattern of choices in order to determine a common cut point in discounting the value of social relationships.

Willing to give. To supplement the social discounting lab task in a more straightforward manner, a separate lab task was created for the current study. In the Willing to Give (WTG) task participants were told to imagine they had $100 dollars to spare and were then asked how much of their $100 they would give to a person at a given social distance if that target individual was in need. Participants responded to this scenario for a person at each distance-- closest, close, neither close nor distant, distant, and most distant-- as outlined in the social discounting task.

Temporal discounting. A temporal discounting task was used as a discriminant validity task to assess how participants generally discount the value of a hypothetical monetary amount over time compared to a social situation. Participants were presented with 17 trials in which they were given two options; a hypothetical monetary amount for themselves at the present time or a different hypothetical amount for themselves after some time delay. The hypothetical monetary amount and the time delay were changed for each question, but each participant saw the same pattern of choices in order to determine a common cut point.

Implicit Association Task (IAT). An Implicit Association Task (IAT) based on the ideas presented by Greenwald, McGhee, and Schwartz (1998) was designed for the current study that includes pleasant and unpleasant words matched with pictures of

people and things. Participants responded to 40 practice trials and 160 scored trials, for a total of 200 trials in all. Of these 200 trials 40 practice trials and 100 scored trials were used to calculate the IAT *d* values to determine participants' preferences.

RESULTS

Initially, sex differences among the various correlations between psychopathy and social closeness measures were examined to determine if males and females should be analyzed together or separately. Only 12 of the 252 comparisons were significantly different for males and females. Given that this is how many would be expected using an alpha level of .05, data were analyzed with sexes combined.

Interrelations Among Psychopathy Measures

Intercorrelations between the SRP and EPA-SF indicated strong relations at various levels, particularly at the total score level (r = .88; see Table 1)[2]. Further, EPA-SF Antagonism showed good convergence with SRP IPM (r = .78) and CA (r = .75), as would be expected, while EPA-SF Disinhibition was highly related to SRP ELS (r = .77). EPA-SF Narcissism was most strongly correlated with SRP IPM (r = .57). Despite the strong convergence for the majority of the scales, EPA-SF Emotional Stability did not converge well with the SRP, indicating that the aspects of psychopathy represented within Emotional Stability are not well-represented within the SRP. For the most part these relationships were paralleled in the convergence between EPA-SF subscales and the SRP such that all subscales of EPA-SF Antagonism were highly correlated with SRP CA and IPM, for example.

[2]Because of the large number of relations examined .01 was used as the level required for statistical significance.

Interrelations Among Criterion Measures

Table 2 presents the intercorrelations among the criterion measures. In regard to the social closeness questionnaires the following relationships were notable: IAS Love was strongly related to MPQ Social Closeness (r = .53), and MPQ Well-being (r = .44). While IAS Dominance was also related to these two MPQ scales, it was most strongly related to MPQ Social Potency (r = .58). Within the lab tasks, results showed that Social Discounting was related to IAS Love (r = -.21), MPQ Social Closeness (r = -.19), and MPQ Well-being (r = -.20), but not to IAS Dominance (r = -.06) or MPQ Social Potency (r = -.04). Temporal discounting was most highly related to MPQ Achievement (r = -.24) and MPQ Well-being (r = -.17). Conversely, results indicated that the IAT d was unrelated to any of the other criterion measures.

At the domain level the FFM showed strong correlations with the other criterion measures. Neuroticism was most strongly correlated with IAS Dominance (r = -.32) and MPQ Well-being (r = -.46), and Extraversion was positively correlated with all measures of social closeness, particularly MPQ Social Closeness (r = .78), MPQ Well-being (r = .66), and IAS Dominance (r = .64). Conscientiousness bore its strongest relation to MPQ Achievement (r = .56); Openness was not largely correlated with any of the criterion measures. Agreeableness was very highly correlated with IAS Love (r = .79) and was also related to MPQ Social Closeness (r = .39), MPQ Well-being (r = .32), MPQ Social Potency (r = -.31) and Social Discounting (r = -.29).

Relations Between Psychopathy and Self-Reported Criteria

In order to determine the relation between psychopathy and social closeness, zero order correlations between the SRP and EPA-SF and the self-report measures of

social closeness, including the NEO-PI-R were examined (see Table 3). SRP total scores were very highly, negatively correlated with IAS Love (r = -.68, p < .01) as well as moderately related to MPQ Social Closeness (r = -.30, p < .01), and MPQ Well-being (r = -.26, p < .01), as expected. It is notable that psychopathy as measured by the SRP total score was weakly, negatively correlated with MPQ Achievement (r = -.21, p < .01), contrary to hypotheses. Lastly, SRP-assessed psychopathy was positively correlated with MPQ Social Potency (r = .34, p < .01) as expected. In general, MPQ Social Closeness, MPQ Well-being, and MPQ Achievement bore similar relations to the SRP and its subscales while IAS Love was highly correlated with the measure; overall these social closeness measures were most strongly related to the interpersonal SRP scales of CA and IPM. MPQ Social Potency presented an exception to the pattern of association with the SRP and its subscales, such that it was related positively to the SRP and moderately correlated to SRP ELS (r = .36), while the other MPQ scales were not. Overall, IAS Dominance was unrelated to the SRP.

Results were similar for the EPA-SF total score and two of its factors- Antagonism and Disinhibition- wherein they were most highly associated with IAS Love, MPQ Social Closeness, and MPQ Well-being with more moderate correlations observed for MPQ Achievement and Social Potency (see Table 3). Narcissism bore slightly different relations in that its strongest correlations were with IAS Dominance (r = .51) and MPQ Social Potency (r = .71). Emotional Stability was least like the other EPA-SF factors, showing only moderate correlations with IAS Dominance (r = .31), MPQ Social Potency (r = .32), and MPQ Well-being (r = .31).

At the subscale level there were several noteworthy correlations including those of EPA-SF Callousness and Self-Centeredness with IAS Love (*r*'s of -.74 and -.68, respectively) and Dominance and Self-Assurance with MPQ Social Potency (*r*'s of .70 and .55, respectively) and IAS Dominance (*r*'s of .46 and .57). Further, MPQ Social Closeness was most highly correlated with Coldness ($r = .51$) and Self-Assurance ($r = .53$) at the EPA-SF subscale level. MPQ Well-being was most highly associated with EPA-SF Self-Assurance ($r = .53$).

As expected, the FFM domains of agreeableness and conscientiousness were the strongest and most robust correlates of the two psychopathy scales. With the exception of the EPA-SF subscales of Self-Assurance, Invulnerability, and Self-Contentment, agreeableness was significantly negatively correlated with all EPA-SF subscales and factors and SRP scales ranging from a low of $r = -.20$ for EPA-SF Emotional Stability to a high of $r = -.82$ for EPA-SF Antagonism. Conscientiousness was moderately associated with the total scores for the SRP ($r = -.38$) and EPA-SF ($r = -.41$) and strongly correlated to the impulsivity-specific factors and scales such as SRP ELS ($r = -.50$), and EPA-SF Disinhibition ($r = -.68$), Impersistence ($r = -.63$) and Rashness ($r = -.70$). The domain of neuroticism was unrelated to the SRP total score and its four factors; it was most prominently associated with the subscales that make up EPA-SF Disinhibition and Emotional Stability. Extraversion was most highly associated with the subscales of EPA-SF Antagonism and Narcissism. Openness resulted only in small or moderate correlations for the most part with its highest relation being of that with EPA-SF Antagonism ($r = -.35$) at the higher order level and EPA-SF Callousness at the subscale level ($r = -.40$).

Placement Within the Interpersonal Circumplex

In addition to the correlations between psychopathy measures and the IAS, angular locations and vector lengths were calculated for the psychopathy scales to determine placement on the interpersonal circumplex (see Table 3). The angular location identifies the octant that describes the characteristic patterns of interpersonal behavior associated with the construct. The vector length represents the "interpersonality" of the construct such that longer vector lengths indicate greater saturation of the construct with interpersonal information. Figure 2 shows the location of the SRP Total score, SRP subscales, EPA-SF Total, and EPA-SF higher-order factors on the interpersonal circumplex.

As expected, all variables fell on the low communion side of the circumplex, projecting between BC (Arrogant-Calculating) and DE (Cold-hearted); SRP total (angle: 169.99; vector: .69), SRP IPM (angle: 171.12; vector: .65), SRP ELS (angle: 151.86; vector: .49), SRP ASB (angle: 170.31; vector: .42), EPA-SF total (angle: 162.43; vector: .63), and EPA-SF Disinhibition (angle: 174.14; vector: .39). Relatedly, SRP CA (angle: 181.55; vector: .74) and EPA-SF Antagonism (angle: 188.57; vector: .74) projected very near the low communion axis on the DE (Cold-hearted) side. It is notable that EPA-SF Narcissism (angle: 120.47; vector: .59) and EPA-SF Emotional Stability (angle: 106.19; vector: .32) projected between the PA (Assured-Dominant) and BC (Arrogant-Calculating) portions of the circumplex, slightly separate from the rest of the psychopathy measures.

Moreover, it is important to recognize the differences in vector lengths as indications of how saturated with interpersonal content the constructs are. For example,

the EPA-SF and SRP total scores as well as SRP CA, SRP IPM, EPA-SF Antagonism, and EPA-SF Narcissism all have vector lengths of .59 or over, indicating that these constructs are strongly interpersonal in nature. Other constructs, such as SRP ASB and ELS, have moderate vector lengths indicating that they are less saturated by interpersonal content than those with large vector lengths. Still others, including EPA-SF Disinhibition and EPA-SF Emotional Stability appear to have very little interpersonal content, indicated by their small vector lengths.

Relations Between Psychopathy and Lab Tasks

To supplement the self-report questionnaires, analyses examined results from the laboratory tasks including expected differential social discounting rates according to psychopathy level. Level of social discounting was quantified using an equation developed by Rachlin and Raineri (1992): $v = \frac{V}{(1+sN)}$; where *v* is the discounted value of the reward, V is the undiscounted value of the reward, N is a measure of social distance, and *s* is a constant measuring degree of social discounting. In this equation, less altruistic/more selfish choices are indicated by higher *s* values such that the hypothetical monetary amount is perceived as less valuable when it is shared with another individual and the participant "crosses over" to choosing the selfish option more quickly (Jones & Rachlin, 2006). An *s* value was determined for each participant and correlated with the measures of psychopathy[3]. As hypothesized social discounting was positively correlated with psychopathy as measured by the SRP total score (r = .19, p = .01) and EPA-SF total score (r = .21, p < .01), such that those with higher

[3]The Area Under the Curve (AUC) was also calculated for each participant and correlated with psychopathy. Results were substantively identical to those using the *s* value so are not presented.

psychopathy scores discounted the value of the hypothetical money faster and acted less altruistically than those with lower psychopathy scores. In addition, SRP-CA, SRP-IPM, and EPA-SF Antagonism were positively correlated with the social discounting *s* value with *r's* of .21, .23, and .32, respectively (all *p*'s < .01; see Table 4). In terms of EPA scales, social discounting *s* was significantly correlated with Callousness (*r* = .28), Coldness (*r* = .28), Self-Centeredness (*r* = .35), Arrogance (*r* = .24), and Self-Contentment (*r* = .35).

Additionally, the calculated cross-over points were used to identify the maximum amount participants were willing to forgo to give $75 to person N. Participants were separated into high, low, and average psychopathy groups to compare the three (see Figure 3). At all social distances those in the high psychopathy group were willing to forgo less money than those in the average and low psychopathy groups. The difference was greatest when person N was someone whom they consider closest to them; whereas those in the low psychopathy group were willing to forgo $85 on average, those in the average psychopathy group were willing to forgo $80 on average, but those in the high psychopathy group were willing to forgo only $61 on average.

Similar analyses were run using the willing to give (WTG) variable such that a *k* value similar to the *s* in the social discounting task was calculated for each participant. Higher *k* values indicated that the individual made less altruistic choices represented by less money granted to the target individual. The resulting *k* values were correlated with the social discounting *s* value (*r* = .14; *p* = .07) as well as measures of

psychopathy. Results indicated that the WTG *k* was correlated with EPA-SF Coldness ($r = .27$; $p < 01$) with no other correlations reaching significance at the .01 level.

Next, the nature of the participants' discounting was examined to see if it was general or specific to social discounting by correlating psychopathy with the discriminant validity task, temporal discounting. Temporal discounting was quantified by counting the number of times the individual chose the immediate reward over the delayed reward; therefore, higher temporal discounting rates are indicative of more impulsive choices. Temporal discounting was positively correlated with some aspects of psychopathy, but less consistently than social discounting. Temporal discounting was significantly correlated with EPA-SF Coldness ($r = .19$) and Self- Impersistence ($r = .26$) at the .01 level.

Overall, social discounting was significantly correlated with more aspects of psychopathy than temporal discounting, and of these significant correlations social discounting was correlated more strongly on average to psychopathy (average $r = .27$) than temporal discounting (average $r = .22$). Further, regression analyses showed that with the exception of EPA-SF Self-Contentment, controlling for temporal discounting did not eliminate the significant relationships between social discounting and the various psychopathy scales.

In regard to the IAT, differences in reaction times on trials with both types of stimuli present (pleasant/unpleasant words and person/thing pictures) were used to calculate the IAT effect quantified as an IAT *d* value with positive values indicating a preference for people and negative values indicating a preference for things. An IAT *d* value was calculated for each participant and the average effect for the sample was *d* =

.95 with a range of -.06 to 2.01, indicating a general preference for people rather than things. The IAT *d* value was then correlated with the total scores and subscales of both psychopathy measures to determine the relation between the IAT effect and level of psychopathy. In general, results showed no relationship between IAT *d* and psychopathy aside from a weak relationship with EPA-SF Opposition (r = -.19, p = .01). The same pattern of correlations was run using the practice and test trials of the IAT separately to identify any markedly differential responding among participants. There was only one difference such that using the test trials alone resulted in EPA-SF Opposition (r = -.15, p = .04) and Self-Contentment (r = -.15, p = .03) relating to IAT *d.* No notable differences were identified when using the practice trials only. Similarly, exploratory analyses revealed that the IAT was not associated with gender or undergraduate major.

DISCUSSION

The present study investigated the possibility that psychopathy may be understood as a disorder of social closeness, a deficit that is often overlooked in the extant literature. By utilizing a multimethod approach it was expected that psychopathy would be negatively associated with self-report questionnaires and lab tasks measuring the positive, communal aspects of social closeness and positively associated with the more agentic aspects of social interactions. Overall, it was expected that a deficit in social closeness would emerge as a core component of psychopathy that is strongly connected to low agreeableness.

Analyses first demonstrated the overall convergence between the two psychopathy scales, the SRP and EPA-SF, indicating that the two successfully measured psychopathy and did so in a similar manner. While the two scales converged well, results indicated that the SRP is more intercorrelated than the EPA-SF, most likely due to the nature of the measures. For example, the SRP scales may be more similar to each other as they were developed by utilizing what is known about psychopathy as operationalized in the PCL-R, a slightly problematic description according to extant literature. Specifically, Lynam and Widiger (2007) criticized the PCL-R by saying that it may not provide a comprehensive or adequate description of the key traits of psychopathy and that it blends the various specific elements of the

disorder. As the SRP is based on the PCL-R, this criticism reasonably applies to it as well, and may be the cause of the high intercorrelations found in the current study. Specifically. intercorrelations among the SRP ranged from a low of .49 for IPM with ASB to a high of .70 for CA with IPM. In contrast, the EPA-SF was built using general personality traits associated with the disorder and represents a more articulated view made up of orthogonal pieces that may not be present in the SRP. Intercorrelations for the EPA-SF ranged from a low of .07 for Emotional Stability with Antagonism to a high of .55 for Antagonism with Disinhibition with a median of .32. As the EPA-SF is made up of more basic elements, it may be better suited to mapping psychopathy onto various outcomes and deficits.

Aside from the convergence at the total score level the two measures converged at the subscale/factor level as well. EPA-SF Antagonism converged best with the interpersonal SRP scales of CA and IPM, while EPA-SF Disinhibition was most highly associated with SRP ELS. EPA-SF Narcissism most closely mapped onto SRP IPM, though not as well as the aforementioned factor/subscale convergences. EPA-SF Emotional Stability did not appear to map onto any of the scales of the SRP, a noticeable issue. Overall, the level of convergence between the two psychopathy scales is similar to what has been found in previous work using the full scale EPA (e.g., Lynam, et al., 2010), and results indicate that the EPA-SF provides more explicit representations of Narcissism and Emotional Stability than the SRP.

While there is growing debate regarding the role of Emotional Stability (as classified as Fearless Dominance in the PPI) in psychopathy, (e.g., Miller & Lynam, 2011) it is still considered an aspect of the disorder and should be included in studies to

allow determination of importance. The lack of Emotional Stability in the SRP limits conclusions in this area. Despite this difference between the two scales results generally showed a high level of convergence between the SRP and EPA-SF, and provided good validation of the EPA-SF at both the factor and scale levels.

Next, the two psychopathy measures were correlated with multiple self-reported measures of interpersonal functioning. As expected the majority of social closeness self-reported criteria were most strongly related to the interpersonal scales of SRP CA, SRP IPM, and EPA-SF Antagonism, such that communal aspects of social interactions – MPQ Social Closeness, MPQ Well-being, IAS Love, and FFM agreeableness —were negatively associated with psychopathy, and one agentic scale—MPQ Social Potency—was positively associated with psychopathy. These results indicate that those with higher levels of psychopathy, particularly as demonstrated in the more interpersonal aspects of the disorder, are characterized by a low sense of communion; defined as being less motivated to maintain social ties with individuals or groups (Tellegen & Waller, 2008). Overall, communion –related variables, namely FFM agreeableness and IAS Love, emerged as the strongest correlates of the two total scores, all subscales of the SRP, and most of the EPA-SF factors, supporting hypotheses (see Table 5). Conversely, agency is represented only in specific aspects of the EPA-SF; therefore, psychopathy is less associated with agentic qualities, such as being interpersonally dominant and status-seeking, than with low communion. Further, the majority of aspects of psychopathy were negatively related to the agentic subscale of MPQ Achievement in particular, contrary to hypotheses.

Projecting the main scales of the two psychopathy measures onto the IAS interpersonal circumplex further supported the conclusion that psychopathy is accurately characterized by a low sense of social closeness and communion such that they all projected on the low communion side of the circumplex, opposite of being warm and agreeable. Again, these results indicate that those high in psychopathy can be described as antagonistic and lacking desire to create and maintain successful social relationships with others. Further, the moderate to large vector lengths of the psychopathy scales show the high degree to which they are saturated with interpersonal content. Unsurprisingly, the two total psychopathy scores as well as EPA-SF Antagonism, SRP CA, and SRP IPM, the aspects of psychopathy that were most highly associated with the self-reported social closeness measures overall, had the largest vector lengths. Given these results it makes sense to frame psychopathy as a disorder of social functioning and communion as it is heavily influenced by interpersonal characteristics that are highly associated with measures of social closeness. This deficit in social closeness plausibly leads to the maladaptive behavior that is observed in psychopathic individuals.

The lab tasks, specifically the social discounting task, in the current study provided further support for this possibility, as a deficit of social closeness is apparent through this method as well. In regard to the social discounting task, the degree of social discounting was positively related to psychopathy, such that those higher in psychopathy discounted the value of the hypothetical monetary reward faster than those lower in psychopathy. More specifically, these results suggest that those higher in psychopathy are less willing to share a hypothetical monetary award with another

individual at any social distance and value social relationships less than their lower psychopathy counterparts. This relationship was stronger than that of psychopathy with temporal discounting in the present study, a relationship that has been shown previously (e.g., Morgan, Gray, & Snowden, 2011). The less involved willing to give task did not provide strong supporting results, indicating that the more complex nature of the social discounting task was beneficial in detecting this relationship.

While the self-report measures and social discounting task supported the idea that one's level of psychopathy is inversely related to communality and how much one values social relationships, the IAT did not add to this conclusion. In general, there were no noteworthy correlations between psychopathy and the IAT *d* effect, indicating that one's preference for people versus things is not related to how psychopathic he is as measured in this way. However, the IAT did not correlate with gender or undergraduate major either, bringing into question the validity of the task.

Despite the support provided by the current study that a deficit in social closeness/communion may be central to psychopathy, the study is not without limitation. While the multimethod approach strengthens these results, the undergraduate sample may minimize generalizability of the conclusions. Further, the assessments utilized in the present study were limited. For example, the psychopathy scales used may not measure dominance in the same manner or as fully as other extant psychopathy measures; therefore, other measures may have found different results. Perhaps if other psychopathy measures that include dominance (e.g., the PPI) were used, the relationship would emerge more strongly. In fact, a previous study by Verona, Patrick, & Joiner (2001) suggests that the relationship between psychopathy

and MPQ Achievement, an agentic, dominant scale, may be complex. Though their study found a similar result in regard to the total score and second factor of psychopathy, they found a positive relationship between MPQ Achievement and PCL-R factor 1, which assesses the interpersonal aspects of the disorder, when factor 2 was partialled out. Therefore, in the current study the hypothesized positive relationship may have been undetected due to the method in which psychopathy was measured.

In addition, the IAT created for this study appears to be limited in its use. With the exception of EPA-SF Opposition, results of multiple analyses indicated that the IAT was not associated with anything in the study. Exploratory analyses examining the association between the IAT and gender and undergraduate major (STEM versus non-STEM) yielded no significant results either, contrary to what would be expected given extant literature. For example, previous work suggests that preferences for people versus things differ based on these categorizations (e.g., Graziano, Habashi, Evangelou, & Ngambeki, 2012). Perhaps a different method of detecting preferences, such as the orienting questionnaire utilized by Graziano, et al. (2012) would have produced different results.

Even with these limitations, the current study provided evidence that psychopathy may be thought of as a disorder rooted in deficits of communion and social closeness. Future research should build on these results and investigate this possibility further with a wider range of measures and tasks such as the PPI and orientation questionnaire as mentioned previously. Moreover, there are multiple options for building on the idea of low communion and how it may be operationalized and assessed. For example, adding to the minimal research involving psychopaths'

Theory of Mind (ToM), or the ability to attribute mental states to oneself and others while understanding that others have thoughts, beliefs, and feelings of their own, may further inform the idea of low communion in the disorder. Another possible area of exploration is that of schadenfreude, or experiencing pleasure from another's misfortune. By investigating psychopathy in relation to various pathways related to communion and social closeness the deficit of low communion will become better articulated, leading to a better understanding of the psychopath in general.

Crucially, the results of the current study suggest that the lack of research and/or theory focusing on low communion as a core deficit of the disorder is detrimental to the field of psychopathy. An exception to this may lie within Mealey's (1995) evolutionary model that frames psychopathy as an "ethical pathology," a disorder based on the idea that traits or behaviors that are functional or adaptive for one party results in dysfunction or negative consequences for others. According to this line of thought psychopaths behave in such a way as to increase their fitness to the detriment of the other person in the interaction. This interaction style fits with the idea of low communion, such that the psychopath is not motivated to create or maintain a positive social relationship with another individual, but instead is only concerned for his well-being. Moreover, Mealey (1995) argues that psychopaths' ToM is irregular. Specifically, she posits that psychopaths are deficit in regard to the emotional aspects of ToM such that they utilize "a pure cost-benefit approach based on immediate personal outcomes, with no 'accounting' for the emotional reactions of the others with whom they are dealing" (p. 536).

Finally, while many of the extant theories of psychopathy have biological roots, there seems no reason for this to be a necessity. With other psychological disorders understood as deficits in social interactions and interpersonality (i.e., Autism Spectrum Disorders), why is this possibility overlooked in the case of psychopathy? The current results suggest that this is a mistake and that low communion and lack of social closeness are prevalent in those with psychopathic characteristics. The current study is an important step in exploring and solidifying the role that deficits in social closeness and communion play in psychopathy, a core aspect that should be investigated further.

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APPENDICES

Appendix A

Table 1

Correlations Between Psychopathy Scales

Psychopathy Scale	SRP Total	SRP CA	SRP IPM	SRP ELS	SRP ASB
EPA Total	**.88**	**.72**	**.81**	**.70**	**.62**
EPA Antagonism	**.77**	**.75**	**.78**	**.41**	**.57**
EPA Disinhibition	**.73**	**.48**	**.55**	**.77**	**.58**
EPA Narcissism	**.51**	**.39**	**.57**	**.39**	**.38**
EPA Emotion.Stab.	**.23**	**.25**	**.20**	**.20**	.10
			EPA Antagonism Subscales		
EPA Callous	**.72**	**.74**	**.68**	**.39**	**.53**
EPA Coldness	**.43**	**.47**	**.42**	.09	**.43**
EPA Distrust	**.43**	**.41**	**.50**	**.23**	**.26**
EPA Manipulation	**.72**	**.59**	**.77**	**.46**	**.51**
EPA Self Center.	**.67**	**.67**	**.63**	**.40**	**.47**
			EPA Disinhibition Subscales		
EPA Disobliged	**.57**	**.49**	**.49**	**.33**	**.56**
EPA Impersistence	**.38**	**.25**	**.32**	**.30**	**.36**
EPA Opposition	**.69**	**.46**	**.55**	**.70**	**.52**
EPA Rashness	**.45**	**.21**	**.24**	**.64**	**.37**
EPA Thrill Seek	**.62**	**.45**	**.39**	**.79**	**.37**
EPA Urgency	**.33**	.18	**.31**	**.32**	**.27**
			EPA Narcissism Subscales		
EPA Anger	**.51**	**.45**	**.54**	**.40**	**.26**
EPA Arrogance	**.56**	**.54**	**.63**	**.31**	**.32**
EPA Dominance	**.27**	**.19**	**.29**	**.25**	.14
EPA Self Assurance	-.03	-.16	.00	.04	.00

(*table continues*)

Psychopathy Scale	SRP Total	SRP CA	SRP IPM	SRP ELS	SRP ASB
	EPA Emotional Stability Subscales				
EPA Invulnerability	.17	**.19**	**.20**	.16	-.02
EPA Self Content.	-.05	.00	-.04	-.06	-.06
EPA Unconcern	**.40**	**.37**	**.30**	**.34**	**.28**

Note. SRP = Self-Report Psychopathy Scale-III; CA = Callous Affect; IPM = Interpersonal Manipulation; ELS = Erratic Lifestyle; ASB = Anti-social Behavior; EPA = Elemental Psychopathy Assessment- Short Form; Emotion. Stab. = Emotional Stability. Values significant at $p < .01$ appear in bold.

Table 2

Intercorrelations Among Criterion Measures

Social Closeness Scale	IAS Love	IAS Dom.	MPQ Soc. Close.	MPQ Well.	MPQ Soc. Pot.	MPQ Ach.	IAT d	SD *s*	FFM N	FFM E	FFM O	FFM A
IAS Dom.	.16											
MPQ Soc. Close.	**.53**	**.43**										
MPQ Well-being	**.44**	**.46**	**.58**									
MPQ Soc. Potent.	-.10	**.58**	**.31**	**.33**								
MPQ Achieve.	.11	.17	.10	**.36**	.15							
IAT d	.08	.03	.03	.04	.00	-.02						
Soc. Dis. *s*	**-.21**	-.06	-.19	**-.20**	-.04	-.09	.00					
FFM N	-.12	**-.32**	-.17	**-.46**	**-.24**	**-.28**	-.04	-.06				
FFM E	**.53**	**.64**	**.78**	**.66**	**.48**	**.24**	.10	**-.19**	**-.28**			
FFM O	**.28**	.14	.10	.16	.01	.09	.09	-.19	-.05	**.30**		
FFM A	**.79**	-.04	**.39**	**.32**	**-.31**	.17	.02	**-.28**	-.04	**.36**	**.31**	
FFM C	.14	.13	.06	**.25**	-.05	**.56**	.02	-.02	**-.38**	.11	.06	.16

Note. IAS = Interpersonal Adjective Scale; Dom. = Dominance; MPQ = Multidimensional Personality Questionnaire; Soc. Close = Social Closeness; Well. = Well-being; Soc. Pot. = Social Potency; Ach. = Achievement; IAT = Implicit Association Task; SD = Social Discounting; FFM= Five Factor Model; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness. Values significant at $p < .01$ appear in bold.

Table 3

Correlations Between Psychopathy Scales and Social-Closeness Self-Reports

Psychopathy Scale	IAS Love	IAS Dom.	Angular Displace.	Vector Length	MPQ S.C.	MPQ Well.	MPQ S.P.	MPQ Ach.	FFM N	FFM E	FFM O	FFM A	FFM C
SRP Total	**-.68**	.12	169.99	.69	**-.30**	**-.26**	**.34**	**-.21**	.02	-.17	**-.21**	**-.75**	**-.38**
SRP CA	**-.74**	-.02	181.55	.74	**-.40**	**-.35**	.15	-.18	-.04	**-.33**	**-.28**	**-.74**	**-.20**
SRP IPM	**-.64**	.10	171.12	.65	**-.29**	**-.25**	**.38**	**-.21**	.04	**-.22**	**-.25**	**-.78**	**-.21**
SRP ELS	**-.43**	**.23**	151.86	.49	-.07	-.04	**.36**	-.15	.03	.12	.03	**-.46**	**-.50**
SRP ASB	**-.41**	.07	170.31	.42	**-.22**	**-.20**	**.21**	-.14	.04	-.14	**-.18**	**-.46**	**-.31**
EPA Total	**-.60**	**.19**	162.43	.63	**-.25**	-.18	**.46**	**-.22**	.01	-.09	**-.24**	**-.79**	**-.41**
EPA Antag	**-.73**	-.11	188.57	.74	**-.54**	**-.43**	.16	**-.22**	.15	**-.46**	**-.35**	**-.82**	**-.22**
EPA Disinhibit	**-.39**	.04	174.14	.39	-.16	**-.24**	**.23**	**-.38**	**.35**	-.05	-.14	**-.49**	**-.68**
EPA Narcissism	**-.30**	**.51**	120.47	.59	.13	.14	**.71**	.07	-.08	**.28**	-.10	**-.56**	-.10
EPA Emo.Stab.	-.09	**.31**	106.19	.32	.07	**.31**	**.32**	.12	**-.77**	**.21**	.03	**-.20**	.16
EPA Antagonism Subscales													
EPA Callous	**-.74**	-.10	187.70	.75	**-.44**	**-.34**	.16	-.13	-.01	**-.42**	**-.40**	**-.76**	-.11
EPA Coldness	**-.43**	**-.28**	213.07	.51	**-.51**	**-.44**	-.03	**-.22**	.15	**-.47**	**-.22**	**-.47**	**-.20**
EPA Distrust	**-.42**	-.08	190.78	.43	**-.39**	**-.41**	.03	-.07	**.39**	**-.30**	-.15	**-.52**	-.13
EPA Manip.	**-.54**	.11	168.49	.43	**-.31**	**-.20**	**.34**	**-.19**	.01	-.17	**-.25**	**-.67**	**-.20**
EPA Self Cent.	**-.68**	-.13	190.82	.69	**-.46**	**-.33**	.07	**-.24**	.07	**-.44**	**-.32**	**-.75**	**-.22**

(*table continues*)

Psychopathy Scale	IAS Love	IAS Dom.	Angular Displace.	Vector Length	MPQ S.C.	MPQ Well.	MPQ S.P.	MPQ Ach.	FFM N	FFM E	FFM O	FFM A	FFM C
EPA Disinhibition Subscales													
EPA Disoblig.	**-.47**	**-.19**	202.01	.51	**-.35**	**-.37**	.05	**-.28**	**.20**	**-.34**	**-.22**	**-.52**	**-.38**
EPA Impersist.	**-.21**	-.14	213.69	.25	-.16	**-.34**	-.02	**-.63**	**.38**	**-.24**	-.16	**-.25**	**-.63**
EPA Opposition	**-.41**	.16	158.68	.44	-.15	-.10	**.33**	**-.20**	.16	.00	-.02	**-.48**	**-.41**
EPA Rashness	-.10	.08	141.34	.13	.05	-.07	**.19**	**-.34**	**.22**	.08	-.07	**-.21**	**-.70**
EPA Thrill Seek	**-.34**	**.21**	148.30	.40	-.04	.05	**.31**	-.03	-.06	**.20**	-.03	**-.36**	**-.32**
EPA Urgency	-.14	-.05	199.65	.15	-.11	**-.26**	.03	**-.19**	**.60**	-.06	-.15	**-.23**	**-.43**
EPA Narcissism Subscales													
EPA Anger	**-.42**	.08	169.22	.43	**-.24**	**-.28**	**.19**	-.07	**.40**	-.18	-.15	**-.52**	**-.19**
EPA Arrogance	**-.56**	.16	164.05	.58	**-.25**	-.10	**.35**	-.06	-.07	-.16	**-.24**	**-.71**	-.06
EPA Domin.	-.14	**.46**	106.93	.48	**.25**	.18	**.70**	.17	-.13	**.35**	-.03	**-.30**	-.05
EPA Self Assur.	**.32**	**.57**	60.69	.65	**.53**	**.53**	**.55**	.15	**-.39**	**.66**	.14	.09	.04
EPA Emotional Stability Subscales													
EPA Invulner.	-.08	.18	113.96	.20	-.06	.12	**.27**	**.25**	**-.47**	.13	.12	-.08	**.24**
EPA Self Cont.	.09	**.27**	71.57	.28	**.19**	**.46**	**.19**	.14	**-.69**	**.24**	.02	-.05	**.28**
EPA Unconcern	**-.22**	**.23**	133.73	.32	.02	.12	**.25**	-.12	**-.54**	.10	-.07	**-.30**	-.15

(*table continues*)

Note. IAS = Interpersonal Adjective Scale; Dom. = Dominance; Displace. = Displacement; MPQ = Multidimensional Personality Questionnaire; S.C. = Social Closeness; Well. = Well-being; S.P. = Social Potency; Ach. = Achievement; IAT = Implicit Association Task; SD = Social Discounting; SRP = Self-Report Psychopathy Scale-III; CA = Callous Affect; IPM = Interpersonal Manipulation; ELS = Erratic Lifestyle; ASB = Anti-social Behavior; Antag. = Antagonism; Disinhibit. = Disinhibition; Manip. = Manipulation; Emo. Stab. = Emotional Stability; Disoblig. = Disobliged; Impersist. = Impersistence; Domin. = Dominance; Assur. = Assured; Invulner. = Invulnerability; FFM= Five Factor Model; N = Neuroticism; E = Extraversion; O = Openness; A = Agreeableness; C = Conscientiousness. Values significant at $p < .01$ appear in bold

Table 4

Correlations Between Psychopathy and Lab Tasks

Psychopathy Scale	Social Discounting *s*	IAT d	Temporal Discounting
SRP Total	**.19**	-.04	.14
SRP CA	**.21**	-.03	.10
SRP IPM	**.23**	.03	.15
SRP ELS	.04	-.07	.10
SRP ASB	.14	-.08	.10
EPA Total	**.21**	-.03	.11
EPA Antagonism	**.32**	-.02	.15
EPA Disinhibition	.10	-.07	.14
EPA Narcissism	.06	.01	-.07
EPA Emotion. Stab.	.04	.03	.00
	EPA Antagonism Subscales		
EPA Callous	**.28**	-.09	.09
EPA Coldness	**.28**	.08	**.19**
EPA Distrust	.18	.05	.08
EPA Manipulation	.17	-.04	.06
EPA Self Center.	**.35**	-.06	.17
	EPA Disinhibition Subscales		
EPA Disobliged	.18	-.04	.18
EPA Impersistence	.12	-.01	**.26**
EPA Opposition	.01	-.19	.08
EPA Rashness	.06	.01	.10
EPA Thrill Seek	.04	.00	-.03
EPA Urgency	.05	-.05	.06

(*table continues*)

Psychopathy Scale	Social Discounting *s*	IAT d	Temporal Discounting
	EPA Narcissism Subscales		
EPA Anger	.07	.00	.00
EPA Arrogance	**.24**	-.06	.04
EPA Dominance	-.06	-.05	-.11
EPA Self Assurance	-.07	.12	-.10
	EPA Emotional Stability Subscales		
EPA Invulnerability	-.06	.09	-.02
EPA Self Content.	.02	.00	-.03
EPA Unconcern	.12	-.03	.05

Note. SRP = Self-Report Psychopathy Scale-III; EPA = Elemental Psychopathy Assessment-Short Form; Emotion. Stab. = Emotional Stability; Center. = Centeredness; Content. = Contentment; Soc. Discount. = Social Discounting; IAT = Implicit Association Task. Values significant at $p < .01$ appear in bold.

Table 5

Summary of Strongest and Weakest Psychopathy Correlates

Scale	Strongest Correlates	Weakest Correlates
SRP Total	FFM Agreeableness	IAS Dominance†
	IAS Love	FFM Neuroticism
EPA Total	FFM Agreeableness	FFM Extraversion
	IAS Love	FFM Neuroticism
SRP CA	FFM Agreeableness	FFM Neuroticism
	IAS Love	IAS Dominance
SRP IPM	FFM Agreeableness	IAS Dominance
	IAS Love	FFM Neuroticism
EPA Antagonism	FFM Agreeableness	IAS Dominance†
	IAS Love	FFM Neuroticism†
SRP Erratic Lifestyle	FFM Conscientiousness	FFM Openness
	FFM Agreeableness**	FFM Neuroticism
SRP Anti-social Behavior	FFM Agreeableness	IAS Dominance
	IAS Love*	FFM Neuroticism
EPA Disinhibition	FFM Conscientiousness	FFM Extraversion
	FFM Agreeableness*	FFM Dominance
EPA Narcissism	MPQ Social Potency	MPQ Achievement
	FFM Agreeableness	FFM Neuroticism
EPA Emotional Stability	FFM Neuroticism	MPQ Social Closeness
	MPQ Social Potency***	FFM Openness

Note: The absolute values of the strongest correlations are all above .50 except for those with asterisks; * indicates the correlation is above .45, ** indicates the correlation is above .40, and *** indicates the correlation is above .30. The absolute values of the weakest correlations are all below .10 except for those with a cross which indicates these were below .15.

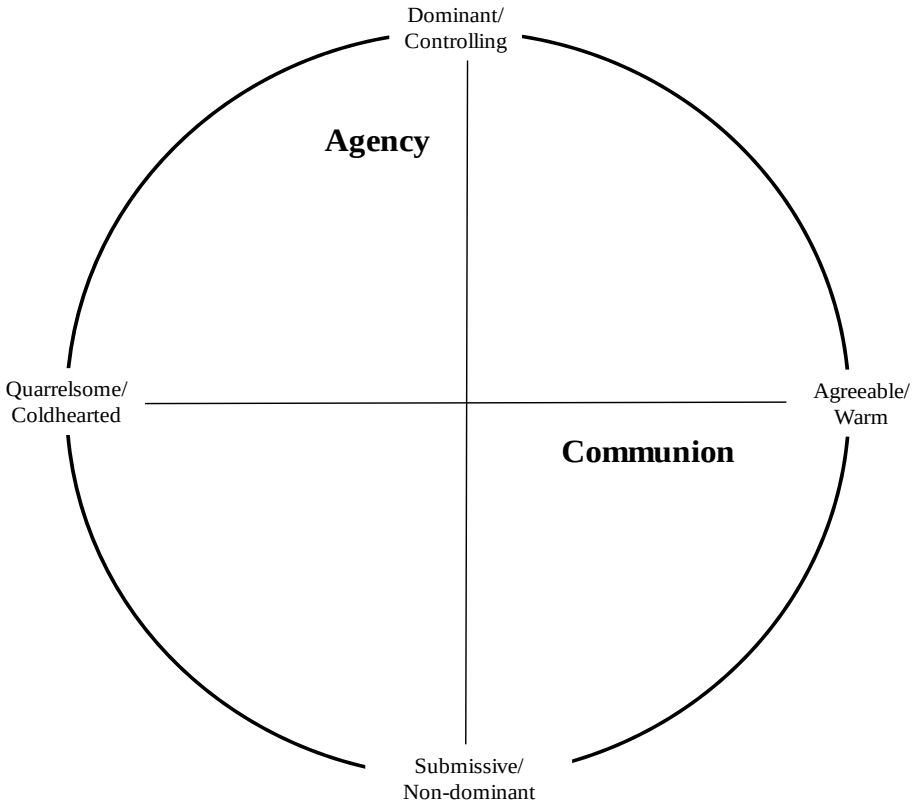


Figure 1. The interpersonal circumplex.

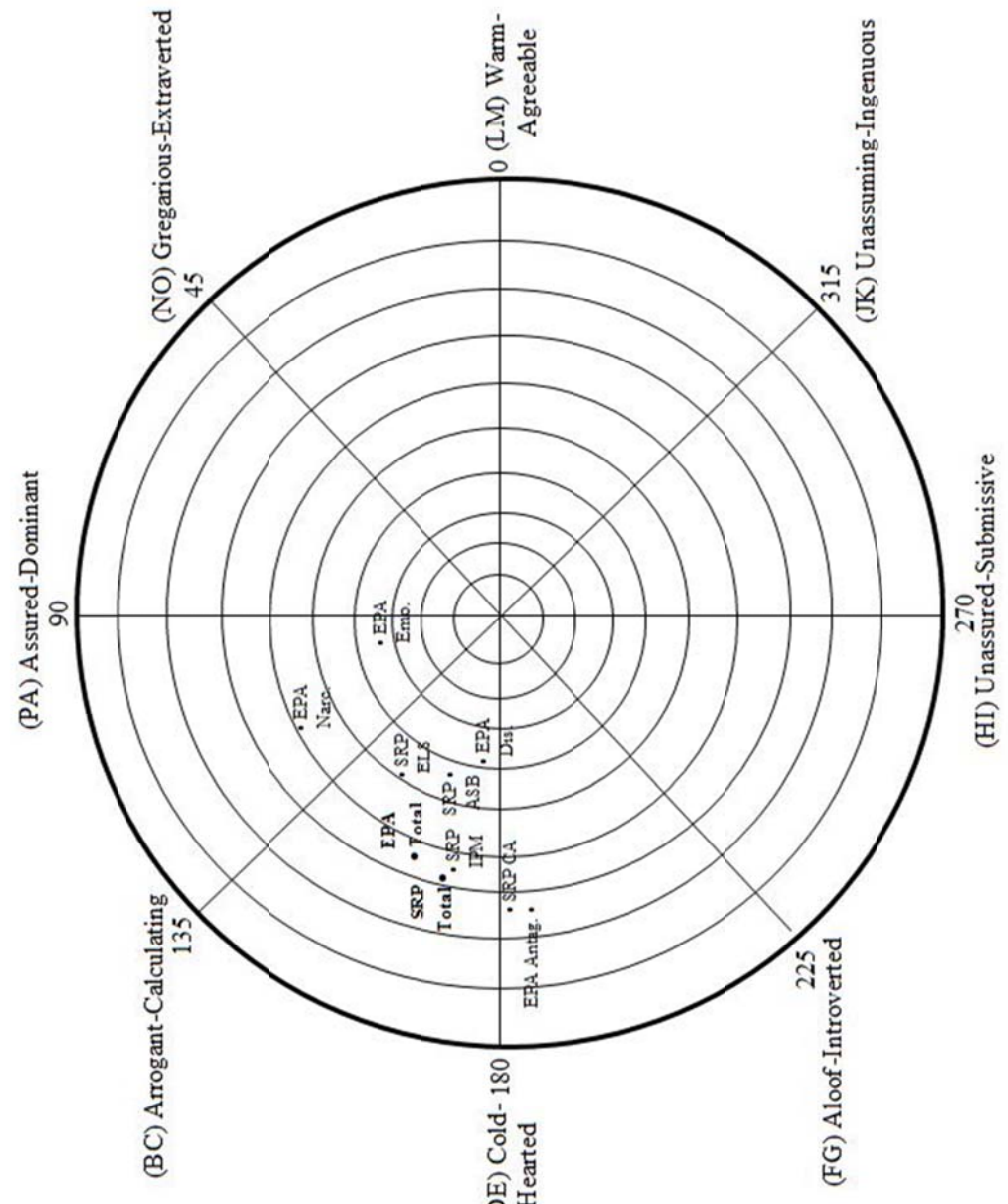


Figure 2. Psychopathy constructs projected onto the interpersonal circumplex.

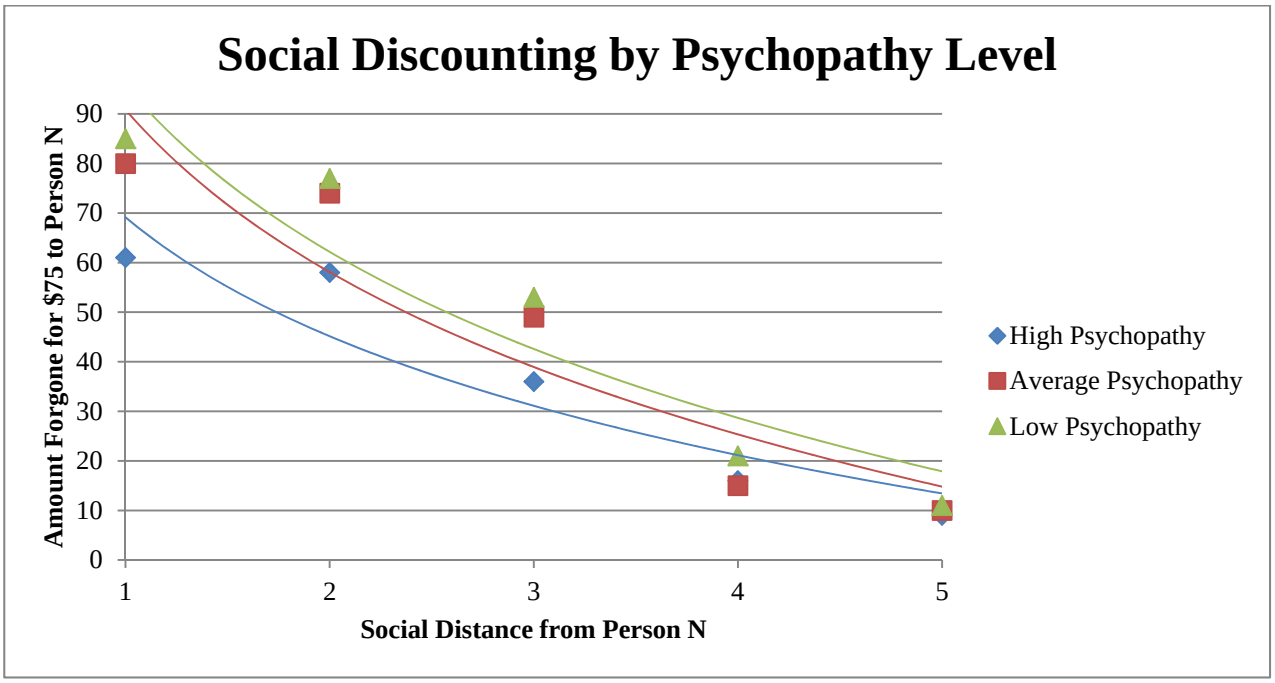
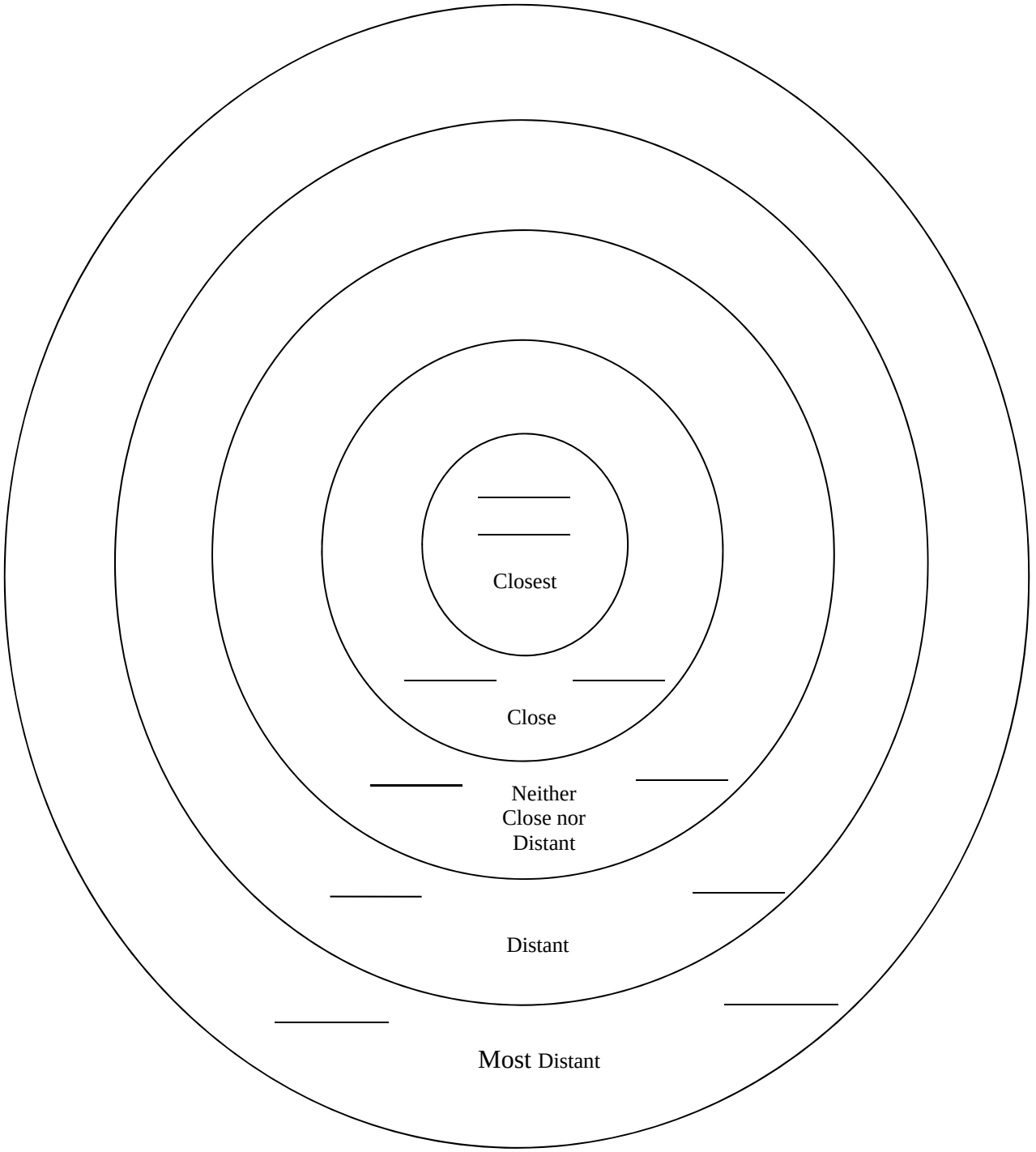


Figure 3. Social discounting by psychopathy level.

Appendix B

Social Closeness Circle: We differ in our how close we feel to the people in our lives. We feel very close to some people, and less close to others. The diagram below is meant to represent five different levels of closeness. The inner circle represents those people to whom you feel closest. The circles in between represent decreasing levels of closeness with the outer circle representing people who are involved in your life in some way but to whom you do not feel particularly close (e.g., acquaintances, or classmates). For each level of closeness, please think of two people that fit in that circle and write their first names.



For each item please choose which option you would prefer. Please note that the hypothetical amount may not be shared in either condition, and if you choose option 2 (an amount for yourself and the other person) he/she is not expected to reciprocate monetarily or otherwise.

1. $155 for you alone	2. $75 for you and $75 for someone to whom you feel closest
2. $145 for you alone	2. $75 for you and $75 for someone to whom you feel closest
3. $135 for you alone	2. $75 for you and $75 for someone to whom you feel closest
4. $125 for you alone	2. $75 for you and $75 for someone to whom you feel closest
5. $115 for you alone	2. $75 for you and $75 for someone to whom you feel closest
6. $105 for you alone	2. $75 for you and $75 for someone to whom you feel closest
7. $95 for you alone	2. $75 for you and $75 for someone to whom you feel closest
8. $85 for you alone	2. $75 for you and $75 for someone to whom you feel closest
9. $75 for you alone	2. $75 for you and $75 for someone to whom you feel closest
…….	

These choices will appear for each level of social closeness in the social discounting task (closest, close, neither close nor distant, distant, and most distant).